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INSTRUCTION MANUAL

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131-38 SANFORD AVE. • FLUSHING, N.Y. 11352
(212) 461-7000 • TWX #710-582-2631

INSTRUCTION MANUAL

VOLTAGE REGULATED
POWER SUPPLY

MODEL SM 325-2X
AND SM 325-2MX

SERIAL NO. . . . . .

The KEPCO equipment described in this instruction manual is of proprietary design, covered by one or more of the following United States patents and/or by other (U.S. and Foreign) Patents or patents pending.

2,992,379	3,112,439	3,241,042	3,275,948
2,992,386	3,128,423	3,243,690	3,303,411
3,028,538	3,131,344	3,243,749	3,303,412
3,056,905	3,210,619	3,275,925	3,303,415
3,088,053	3,226,628	3,275,927	3,305,763
3,092,757	3,241,054		

Canadian Patents: 733629 – 736084
Australian Patents: 263,835 – 264,975

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SPECIFICATIONS AND CONTROLS FOR MODELS SM 325-2X AND SM 325-2MX

I. ELECTRICAL AND PHYSICAL SPECIFICATIONS:

....DC OUTPUT VOLTAGE:
0-325 volts DC, continuously variable.

....DC OUTPUT CURRENT:
0-2 amperes, continuous duty.

....AC INPUT:
105-125 volts, 60 ± 1/2 cps, 12 amperes (max.).

....REGULATION:
Line: Less than 0.01% for 105-125 volt line change at any output voltage within specified range.
Load: Less than 0.01% or 0.001 volt, whichever is greater, for 0-2 ampere step load change, at any output voltage within specified range.

....RIPPLE:
Less than 0.001 volts rms.

....STABILITY:
Output voltage variation is less than 0.01% or 0.001 volt, whichever is greater, over a period of 8 hours, after unit has reached equilibrium. Approximately 3/4 of an hour is required for this unit to reach equilibrium from a "cold start".

....OUTPUT IMPEDANCE:
Less than 0.2 ohm from DC to 1 KC.
Less than 1.0 ohm from 1 KC to 100 KC.

....RECOVERY TIME:
50 microseconds.
Recovery time is defined as time required for output voltage to return to within 0.1 volts of output voltage setting.

....TEMPERATURE COEFFICIENT:
Output voltage changes less than 0.01% per unit C.

....AMBIENT OPERATING TEMPERATURE:
-20 C to +50 C maximum. Protective circuit turns off unit whenever over-temperature condition occurs in pass elements. Interrupting input power resets unit.

....STORAGE TEMPERATURE:
-40 C to +85 C.

.... DIMENSIONS:
8-3/4" high x 19" wide x 13-7/8" deep (behind panel).

.... COLOR:
Kepco Standard Gray Hammertoné.

.... METERS: (APPLIES ONLY TO MODEL SM 325-2MX)
Voltmeter: 0-400 volts, 2-1/2".
Ammeter: 0-2 amps, 2-1/2".

II. TERMINALS AND CONTROLS:

.... (On front panel):

.... DC OUTPUT AND GROUND binding posts, clearly marked. Output terminals isolated from chassis; either positive or negative terminal may be grounded.
.... VOLTAGE CONTROL, continuously variable, for setting output voltage.
.... POWER ON-OFF switch, energizes power and auxiliary transformers.

.... (At rear of unit):
.... DC OUTPUT AND GROUND binding posts, clearly marked; either positive or negative terminal may be grounded.
.... REMOTE ERROR SENSING binding posts provide means of maintaining specified regulation directly at the load. (See P. C-2).

III. PROTECTIVE FEATURES:

.... REFERENCE FUSE (ac) for auxiliary supplies.
.... POWER FUSE (ac) for line power input.
.... DC FUSE for main supply.

.... OVERLOAD PROTECTION:
Provided by inherent current limiting action of FLUX-O-TRAN. Output may be shorted momentarily without damage to unit. Continuous overload or short will blow DC FUSE.

.... OVER-TEMPERATURE PROTECTION:
Thermostat relay control turns unit off if temperature of pass elements exceeds safe limit. Relay is reset by interrupting input power with ON-OFF switch on front panel, or by disconnecting line cord from power source.

SECTION B

BRIEF THEORY:

Two circuit schematic drawings titled "POWER UNIT" and "CONTROL UNIT" are included in the Reference Index of this instruction manual. These drawings contain designations corresponding to the capitalized terms in the following discussion.

Some basic functional relationships in this power supply are illustrated in block Diagram B-1 (Page B-2A).

The POWER UNIT includes:

DC SOURCES:

....MAIN SUPPLY - (consisting of a Kepco "Flux-O-Tran" transformer, full wave bridge rectifier, and capacitive filter) provides line regulated DC power for the output, via the PASS CIRCUITRY.

....AUXILIARY SUPPLIES: COLLECTOR SUPPLY (negative full wave rectified) for PASS CIRCUITRY driver stages not connected to MAIN SUPPLY; I_{CO} SUPPLY (full wave rectified) compensates for spurious biasing effects of collector leakage current; RETURN SUPPLY (full wave rectified) acts as leakage current path for series pass transistors and as bleed path to provide minimum operating current for pass transistors; CONTROL UNIT SUPPLY (full wave rectified).

PASS CIRCUITRY:

The power transistors which function as pass elements (i.e. are in series with the load) may be regarded effectively as variable resistors (or conductors) controlled by a CONTROL SIGNAL. The current "passed" by these elements is a function of the emitter-base bias. The CONTROL SIGNAL is applied to the base terminal; hence a negative CONTROL SIGNAL will aid the forward conduction of a PNP transistor while a positive CONTROL SIGNAL will reduce the forward conduction. In response to the CONTROL SIGNAL the pass elements effect a current and voltage distribution in the main DC loop which holds the output voltage constant.

The CONTROL UNIT includes:

REFERENCE CIRCUITRY:

The function of the REFERENCE CIRCUITRY is to maintain a precise, stable, voltage standard for the COMPARISON AMPLIFIER.

COMPARISON AMPLIFIER:

The COMPARISON AMPLIFIER is essentially a series of cascaded transistor amplifiers which boost the differential error signal produced in the COMPARISON BRIDGE to a level sufficient to drive the PASS CIRCUITRY. The COMPARISON AMPLIFIER is connected across the COMPARISON BRIDGE from the junction of the VOLTAGE CONTROL and the REFERENCE RESISTANCE to the junction of the REFERENCE DIODE and the negative output terminal (See Diagram on Page B-2A). This arrangement is similar to that of a null galvanometer across a Wheatstone bridge. Unbalance in the COMPARISON BRIDGE is amplified to produce a CONTROL SIGNAL of suitable magnitude and phase to effect corrective action by the PASS CIRCUITRY.

COMPARISON BRIDGE: (See Diagram B-2, Page B-2A).

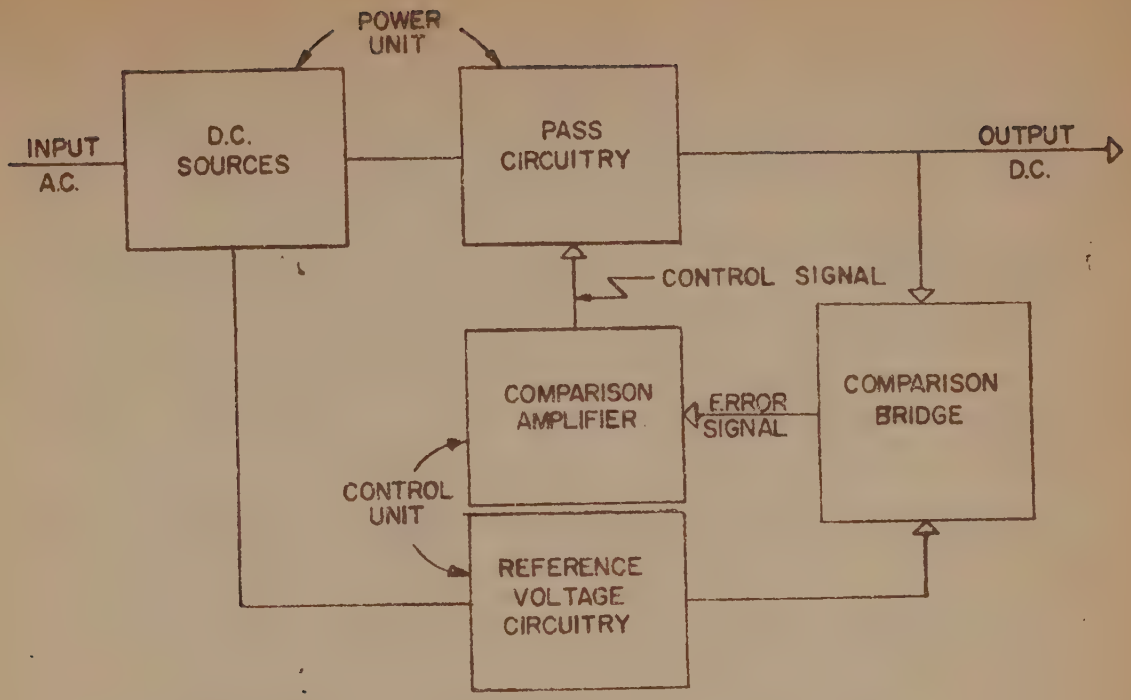
This bridge circuit implements the comparison between the OUTPUT VOLTAGE and the REFERENCE VOLTAGE. The signal produced by the comparison drives the COMPARISON AMPLIFIER.

Balance occurs in the Comparison Bridge when the following ratios are equal:

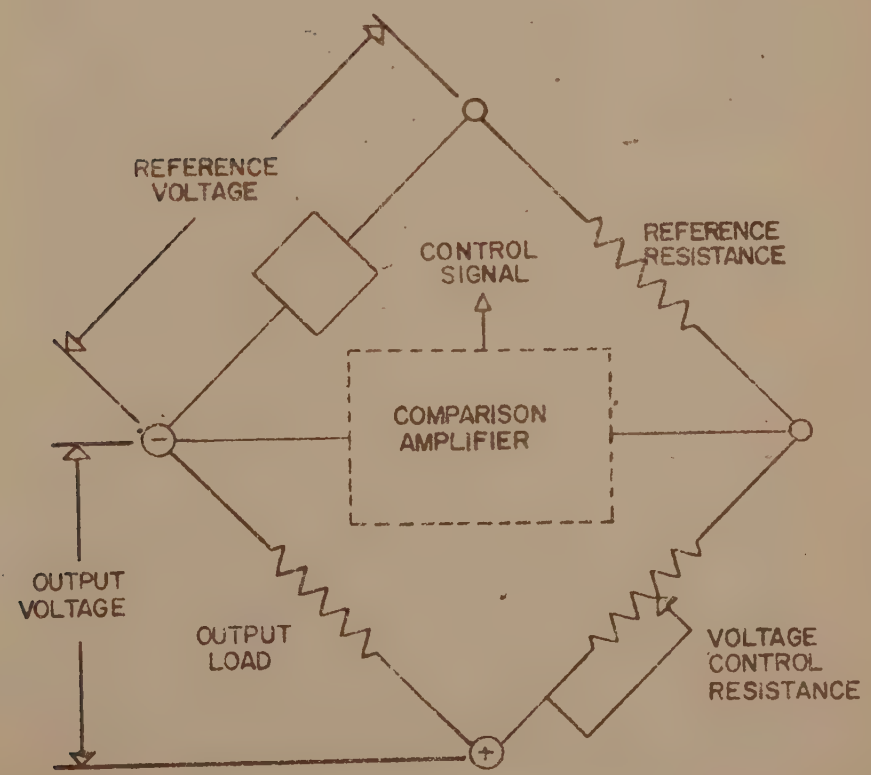
$$\frac{\text{Output Voltage}}{\text{Voltage Control Resistance}} = \frac{\text{Reference Voltage}}{\text{Reference Resistance}}$$

When, for example, the Comparison Bridge is unbalance by a decreasing output voltage drop across the load, it gives rise to a negative signal at the base of the COMPARISON FOLLOWER in the COMPARISON AMPLIFIER circuit. This signal is amplified in cascade and communicated to the pass elements as a negative base input aiding their forward conduction and consequently increasing the output voltage.

A bridge unbalance caused by an increasing output voltage produces, of course, a chain of oppositely biased circuit responses which reduce the voltage across the load.



(DIAGRAM B-1) *VOLTAGE REGULATED POWER SUPPLY*



(DIAGRAM B-2) *COMPARISON BRIDGE*

This power supply is shipped without any internal packing material; and may be put into operation immediately. It is designed for rack and for bench use. Carrying handles are provided on front panel.

....INTIAL "TURN - ON" PROCEDURE:

1. Adjust VOLTAGE CONTROL to approximate mid-range position.
2. With POWER ON-OFF switch set in "OFF" position, connect line cord to 115 v ac, 60 cps input power. If outlet is not polarized use 3 to 2 - prong adapter supplied with unit.
3. Set POWER ON-OFF switch to "ON" position.
4. Adjust VOLTAGE CONTROL to obtain desired output voltage.

....GENERAL OPERATION:

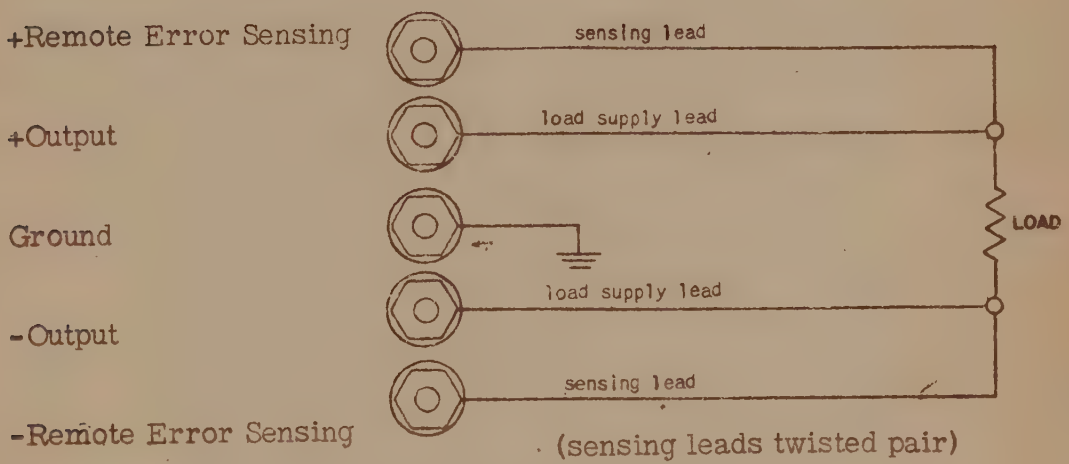
1. Once it has been determined that the unit is functioning satisfactorily, it is subsequently unnecessary to follow the INITIAL TURN-ON PROCEDURE.
2. The VOLTAGE CONTROL may be left fixed at any setting and the power turned "ON" and "OFF" without any harmful effects.

....MAINTENANCE AND REPAIR:

1. Under normal operating conditions, no mechanical maintenance of any kind should be required. Conservatively rated electrical components assure long trouble-free operating life.
2. Exceptional component accessibility, provided by resistor board construction and plug-in sub-assemblies, facilitates servicing, should it be required. It is emphatically recommended that trouble-shooting be handled by personnel highly familiar with transistor circuitry, - preferably with experience in closed-loop designs.
3. This unit should not be returned to the manufacturer without proper authorization and shipping instructions. In any correspondence with the factory regarding repair, the model, serial number, and symptoms of malfunction must be included.

REMOTE ERROR SENSING OPERATION

(Terminal Connections)



(sensing leads twisted pair)

(Procedure)

1. With AC input power disconnected, remove jumpers between plus and minus Output terminals and Remote Error Sensing terminals on the rear of the unit.

2. Using twisted pair wire, connect sensing leads from positive and negative Remote Error Sensing terminals to the load (observing polarities).

3. Using twisted pair wire, connect load supply leads from positive and negative Output terminals.

IMPORTANT NOTE: This unit should not be operated with Remote Error Sensing if the voltage drop across the load supply leads exceeds 0.5 volt (maximum) per lead at maximum rated output current.

SCHEMATIC NO.	QTY.	DESCRIPTION	MFRS. NAME & PART NO. (See Note)	KEPCO PART NO.
B201	1	Fan, Venturi	Rotron	149-0013
C201, 202, 203, 205	4	Capacitor, Electrolytic, Can 1.0 K µf, 450 v	Industrial Cond. 40B808	117-0249
C204	1	Capacitor, Paper, Can Type 8 µf, 660 VAC	General Electric 49F6040	117-0393
C206	1	Capacitor, Mylar 1.0 µf, 600 v, 20%	Hopkins Eng. 1P6M	117-0447
C207	1	Capacitor, Paper, Can 2 X 1 µf, 600 v	Industrial Cond. 315HA	117-0022
C301	1	Capacitor, Ceramic 0.01 µf, 1000 v, 20%	Sprague Electric 36C142A1	117-0090
C302	1	Capacitor, Electrolytic, Pigtail 10 µf, 150 v	Industrial Cond. 10B912RM	117-0147
C401	1	Capacitor, Electrolytic, Pigtail 350 µf, 50 v	Industrial Cond. 1B844	117-0114
C402	1	Capacitor, Electrolytic, Pigtail 100 µf, 200 v	Industrial Cond. 20B317RM	117-0222
C403, 404	2	Capacitor, Electrolytic, Pigtail 500 µf, 50 v	Industrial Cond. 1B1163RM	117-0221
C405, 406	2	Capacitor, Ceramic 0.05 µf, 500 v, 20%	Sprague Electric 36C142A1	117-0163
C501	1	Capacitor, Electrolytic, Pigtail 20 µf, 450 v	Industrial Cond. 45RM20	117-0151
C502	1	Capacitor, Mylar 0.1 µf, 1 K v, 10%	Good All 620S104010W	117-0073
CR201	1	Rectifier Assembly, Stack Type Includes the following:	Kepco Inc.	124-0159
	2ea.	Rectifier, Silicon	Tung Sol CS124E	124-0158
	2ea.	Rectifier, Silicon	Tung Sol CS124ER	124-0157
CR301	1	Rectifier, Silicon, Pigtail	Automatic PT-5	124-0028
CR303	1	Zener Diode	Hoffman 1N429	121-0001
CR401, 402 405-408	6	Rectifier, Silicon, Pigtail	Columbus CEC105	124-0133
CR403, 404	2	Rectifier, Silicon, Pigtail	Automatic PT-5	124-0028
F101	1	Fuse, Instantaneous 15 a	Bussman ABC-15A	141-0010

PLEASE NOTE: THE MANUFACTURER'S NAME AND PART NUMBER LISTED FOR EACH ITEM ON REPLACEMENT PARTS LISTS, REPRESENTS AT LEAST ONE SOURCE FOR THAT ITEM AND IS LISTED SOLELY FOR THE CONVENIENCE OF KEPCO EQUIPMENT OWNERS IN OBTAINING REPLACEMENT PARTS LOCALLY. WE RESERVE THE RIGHT TO USE EQUIVALENT ITEMS FROM ALTERNATE SOURCES. KEPCO, INC.

SCHEMATIC NO.	QTY.	DESCRIPTION	MFRS. NAME & PART NO. (See Note)	KEPCO PART NO.
F102	1	Fuse, Slow Blow 3 a	Bussman MDX 3A	141-0028
F401	1	Fuse, Instantaneous	Bussman AGC-2A	141-0012
*M101	1	Meter 0-400 v, DC, 2 1/2"	General Electric 8DW91V206AY2	135-0157
*M102	1	Meter 0-2 a, DC, 2 1/2"	General Electric 8DW91A225BR2	135-0154
PL101	1	Pilot Light	General Electric NE-51	153-0024
Q301,302	2	Transistor, Silicon, PNP	Hughes	**119-0055
R201	1	Resistor, Fixed, Power, Strip 1.5 K ohm, 40 w, 5%	Ward Leonard 40S1500	115-0977
R202	1	Resistor, Fixed, Power, Strip 20 ohm, 20 w, 5%	Ward Leonard 20S20	115-0967
R203	1	Resistor, Fixed, Power, Strip 100 ohm, 40 w, 5%	Ward Leonard 40S100	115-0594
R205	1	Resistor, Fixed, Power, Strip 10 K ohm, 20 w, 5%	Ward Leonard 20S10000	115-0770
R206,207	2	Resistor, Fixed, Power, Ribbon 2.5 ohm, 40 w, 5%	Hardwick Hindle Type BR	115-1020
R208	1	Resistor, Fixed, Power, Ribbon 1 ohm, 40 w, 5%	Hardwick Hindle Type BR	115-0834
R209	1	Resistor, Variable, WW 50 K ohm, 4 w, 5%	General Radio 975Q	115-0552
R210,211	2	Resistor, Fixed, Power, Strip 2 K ohm, 40 w, 5%	Ward Leonard 40S2000	115-0699
R212,213	2	Resistor, Fixed, Power, Axial 50 ohm, 3 w, 5%	Ward Leonard 3X500	115-0641
R214	1	Resistor, Fixed, Molded 33 ohm, 1/2 w, 10%	Allen Bradley EB3301	115-0681
R215	1	Resistor, Fixed, Molded 10 ohm, 1/2 w, 10%	Allen Bradley EB1001	115-0502
R216	1	Resistor, Fixed, Power, Axial 10 ohm, 3 w, 5%	Ward Leonard 3X10	115-0421
R301	1	Resistor, Fixed, Power, Axial 50 ohm, 3 w, 5%	Ward Leonard 3X500	115-0641
R302	1	Resistor, Fixed, Molded 470 ohm, 1 w, 10%	Allen Bradley GB4711	115-0630
R303	1	Resistor, Fixed, Molded 5.6 K ohm, 1/2 w, 5%	Allen Bradley EB5626	115-0559

*Metered Models Only

**See Field Replacement Page

REPLACEMENT PARTS MAY BE ORDERED FROM KEPCO, INC. ORDERS SHOULD INCLUDE KEPCO PART NUMBER AND DESCRIPTION.

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SCHEMATIC NO.	QTY.	DESCRIPTION	MFRS. NAME & PART NO. (See Note)	KEPCO PART NO.
R304	1	Resistor, Fixed, Molded 1 K ohm, 1 w, 5%	Allen Bradley GB1025	115-0960
R305	1	Resistor, Fixed, Power, Axial 300 ohm, 3 w, 5%	Ward Leonard 3X300	115-0444
R306	1	Resistor, Fixed, Molded 180 ohm, 1/2 w, 5%	Allen Bradley EB3925	115-0807
R307	1	Resistor, Fixed, Molded 330 K ohm, 1/2 w, 5%	Allen Bradley EB3345	115-0250
R308	1	Resistor, Fixed, Power, Axial 1 K ohm, 5 w, 5%	Ward Leonard 5X1000	115-0512
R309	1	Resistor, Fixed, Molded 100 K ohm, 1/2 w, 10%	Allen Bradley EB1041	115-0809
R310	1	Resistor, Fixed, Molded 1 K ohm, 1/2 w, 10%	Allen Bradley EB1021	115-0547
R320	1	Resistor, Fixed, Power, Axial 2.5 K ohm, 3 w, 5%	Ward Leonard 3X2500	115-0469
RL101	1	Relay 3PDT	Kurman 26D3C	140-0040
S101	1	Switch, Toggle, SPST 15 a, 125 v	Carling Electric AA252-63XKEP2	127-0107
T201	1	Transformer, Flux-O-Tran	Kepco Magnetics	100-1193A
T202	1	Transformer, Variable	Superior Electric Q216U	175-0399
T401	1	Transformer	Kepco Magnetics	100-1179B
	1	Pass Assembly AO/SP67B	Kepco Inc.	110-0122
		Includes the following:		
	1ea.	Transistor, PNP	Motorola	**119-0037
	1	Pass Assembly 2CO.2/SP67B	Kepco Inc.	110-0116
		Includes the following:		
	2ea.	Resistor, Fixed, Power, Axial 0.2 ohm, 5 w, 5%	Ward Leonard 7/"-Y-0.2 ohm	115-0891
	2ea.	Transistor, PNP	Motorola	**119-0037

**See Field Replacement Page

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SCHEMATIC NO.	QTY.	DESCRIPTION	MFRS. NAME & PART NO. (See Note)	KEPCO PART NO.
	1	Driver Assembly 2CO.2TC/SP67B	Kepco Inc.	110-0123
		Includes the following:		
	2ea.	Resistor, Fixed, Power, Axial 0.2 ohm, 5 w, 5%	Ward Leonard 7/8"-Y-0.2 ohm	115-0891
	2ea.	Transistor, PNP	Motorola	**119-0037
	1ea.	Switch, Thermostat N.C.	Chatham Controls DRSCORP73C	127-0093
	1	Rectifier Assembly AZ/1N1374	Kepco Inc.	109-0019
		Includes the following:		
	1ea.	Reference Diode	Hoffman 1N1374	121-0018

**See Field Replacement Page

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kepco REPLACEMENT PARTS LIST

ALL SM-X-MX Code 10-164

SCHEMATIC NO	QTY.	DESCRIPTION	MFRS. NAME & PART NO. (See Note)	KEPCO PART NO.
	1	Capacitor, Electrolytic, Pigtail 10 µf, 50 v	Industrial Cond. 1B1280	[illegible]
	1	Capacitor, Mylar, Pigtail 2 µf, 200 v, 10%	Hopkins Eng. 2P2MK	117-0129
CR1, 2	2	[illegible]	Electronic Devices	124-0176
	1	Transistor, Silicon, PNP	Hughes	**119-0055
	1	Transistor, Silicon, NPN	General Electric	**119-0054
R1, 5	2	Resistor, Fixed, Molded 3.3 K ohm, 1/2 w, 5%	Allen Bradley EB3325	115-0452
R2	1	Resistor, Fixed, Molded 2.7 K ohm, 1/2 w, 10%	Allen Bradley EB2721	115-0560
R3, 4	2	Resistor, Fixed, Precision 500 ohm, 1 w, 1%	Tepro Electric TS1W	115-1192
R6, 7	2	Resistor, Fixed, Precision 6.6 K ohm, 3 w, 1%	Tepro Electric TS3W	115-0952
R8	1	Resistor, Fixed, Power, Axial 15 K ohm, 1 w, 3%	Tepro Electric TS1W	115-1414
R9, 17	2	Resistor, Fixed, Precision 10 K ohm, 1 w, 1%	Tepro Electric TS1W	115-1232
R10, 14	2	Resistor, Fixed, Power, Axial 2.5 K ohm, 3 w, 5%	Ward Leonard 3X2500	115-0469
R11	1	Resistor, Fixed, Precision 400 ohm, 1 w, 1%	Tepro Electric TS1W	115-1191
R13	1	Resistor, Fixed, Power, Axial 500 ohm, 3 w, 5%	Ward Leonard 3X500 LTC	115-0938
[illegible]	1	Resistor, Fixed, Fused, Oxide 150 K ohm, 1/2 w, [illegible]	Corning Glass C20	115-1483
[illegible]	1	Resistor, Fixed, Precision, 300 ohm, 3 w, 5	Ward Leonard 3X300	115-0444
[illegible]	1	Resistor, Fixed, Power, Axial 250 ohm, 3 w, 5%	Hardwick Hindle 9/16 GA-250-LTC	115-0961
[illegible]	2	Resistor, Fixed, Power, Axial 10 ohm, 3 w, 5%	Hardwick Hindle 9/16 GA-10-LTC	115-1160
[illegible]	1	Resistor, Fixed, Molded 100 ohm, 1 w, 5%	Allen Bradley GB1015	115-0902
[illegible]	1	Resistor, Variable, Multiturn 200 ohm, C, 25 w, 10%	Bourns 3067S-1-201	115-0863
R25	1	Resistor, Fixed, Molded 10 ohm, 1/2 w, 5	Allen Bradley GB1005	115-0818
RD1	1	Zener Diode	International Rect. IN821	121-0041

[illegible]d Replacement Page.

[illegible] OF NUMBERS FROM [illegible]

RE NUMBER LISTED FOR EACH ITEM ON REPLACEMENT PARTS LISTS [illegible] SOLELY FOR THE CONVENIENCE OF KEPCO EQUIPMENT OWNERS [illegible] IF DESIRED TO USE EQUIVALENT ITEMS FROM ALTERNATE SOURCE [illegible]

kepco REPLACEMENT PARTS LIST

PRINTED CIRCUIT BOARD ASSEMBLY PCB#1 MODEL SM 325-2MX Code 9-1464

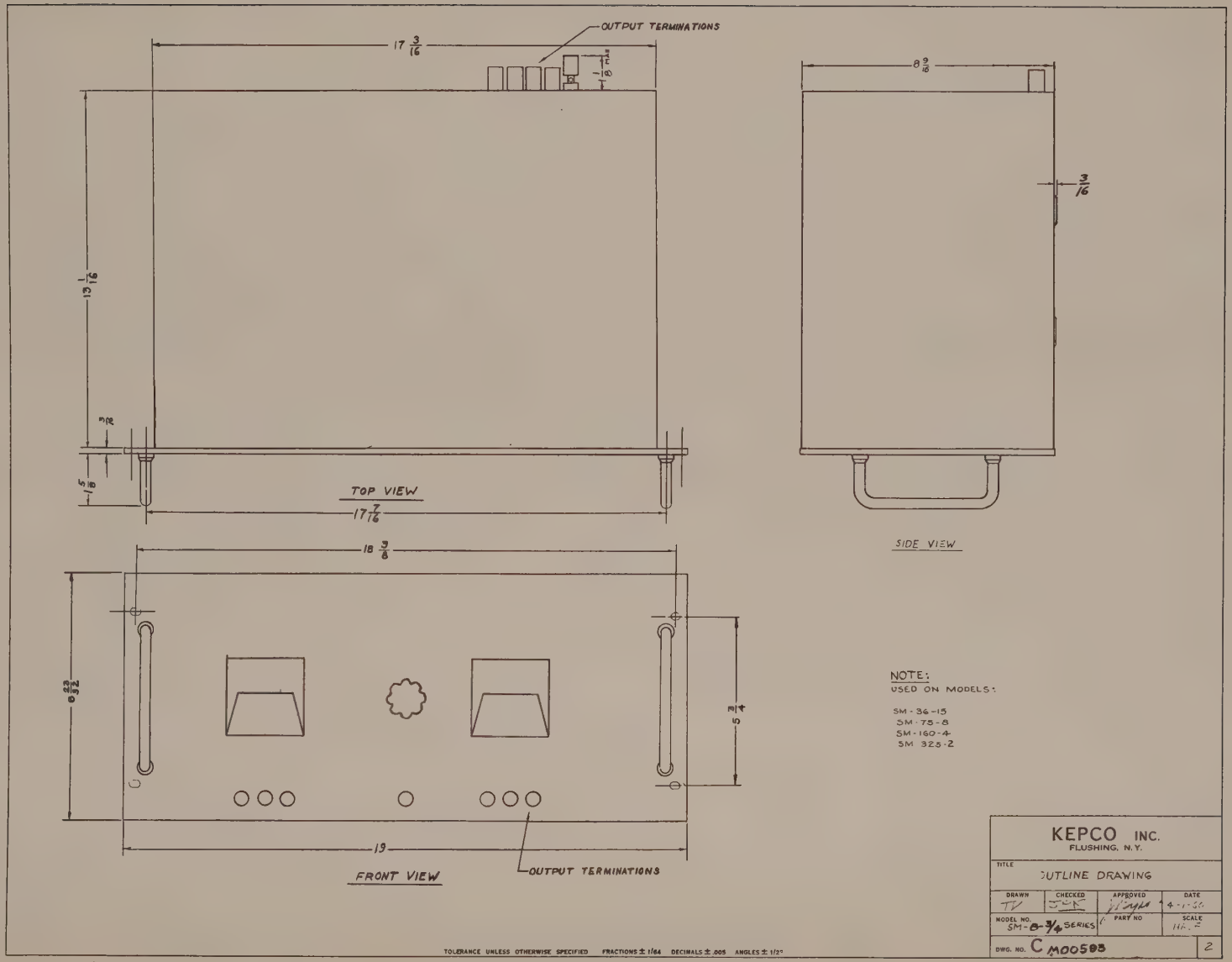
SCHEMATIC NO.	QTY.	DESCRIPTION	MFRS. NAME & PART NO. (SEE NOTE)	KEPCO PART NO.
C3	1	Capacitor, Mylar, Pigtail 0.5 µf, 200 v, 10%	Hopkins Eng. P52MK	117-0123
R12	1	Resistor, Fixed, Precision, WW 900 ohm, 1 w, 1%	Tepro Electric TS1W	115-1195
R15	1	Resistor, Fixed, Molded 100 ohm, 1/2 w, 5%	Allen Bradley EB1015	115-0341

NOTE:
REPLACEMENT PARTS MAY BE ORDERED FROM KEPCO, INC. ORDERS SHOULD INCLUDE KEPCO PART NUMBER AND DESCRIPTION.

PLEASE NOTE. THE MANUFACTURER'S NAME AND PART NUMBER LISTED FOR EACH ITEM ON REPLACEMENT PARTS LISTS, REPRESENTS AT LEAST ONE SOURCE FOR THAT ITEM AND IS LISTED SOLELY FOR THE CONVENIENCE OF KEPCO EQUIPMENT OWNERS IN OBTAINING REPLACEMENT PARTS LOCALLY. WE RESERVE THE RIGHT TO USE EQUIVALENT ITEMS FROM ALTERNATE SOURCES. KEPCO, INC

FIELD REPLACEMENT LIST

Kepco Part No.	Description	Recommended Replacement MFR.	MFR. No.
119-0016	Transistor, PNP	Delco	2N174
119-0020	Transistor, PNP	RCA	2N398A
119-0022	Transistor, PNP	Tung Sol Texas Instrument	2N1707 2N404
119-0024	Transistor, NPN	General Inst. RCA, General Elec. Texas Instrument Sylvania, Texas Instrument	2N1605 2N388 2N1308
119-0034	Transistor, PNP	Delco Hughes	2N1172 2N1131A
119-0035, 0036, 0037	Transistor, PNP	Motorola Clevite	2N1167 CTP 3553
119-0038	Transistor, NPN	Transitron	ST29
119-0048	Transistor, Unijunction	General Electric	2N1671A
119-0049	Transistor, PNP	Delco	2N669
119-0054	Transistor, NPN	General Electric	2N338 2N336A
119-0055	Transistor, PNP	Hughes	2N1131A
119-0056	Transistor, NPN	General Electric	2N336A
119-0057	Transistor, PNP	Delco	DTG-1200
119-0059	Transistor, NPN	RCA	2N3053
119-0060	Transistor, NPN	RCA	2N3054
119-0061	Transistor, NPN	RCA	2N3055
119-0065	Transistor, PNP	Hughes	2N3225
119-0067	Transistor, PNP	Delco	DTG-2400
119-0068	Transistor, NPN	RCA	40250
119-0069	Transistor, NPN	RCA	40251
119-0070	Transistor, NPN	RCA	2N3442



NOTE:
USED ON MODELS:

SM-36-15
SM-75-8
SM-160-4
SM-325-2

KEPCO INC. FLUSHING, N.Y.			
TITLE: OUTLINE DRAWING			
DRAWN: TF	CHECKED: JCK	APPROVED: JJ Sapia	DATE: 4-1-56
MODEL NO.: SM-8-3/4 SERIES		PART NO:	SCALE: HALF
DWG. NO.: C M00503			2

TOLERANCE UNLESS OTHERWISE SPECIFIED FRACTIONS ± 1/64 DECIMALS ± .005 ANGLES ± 1/2°

BM04606

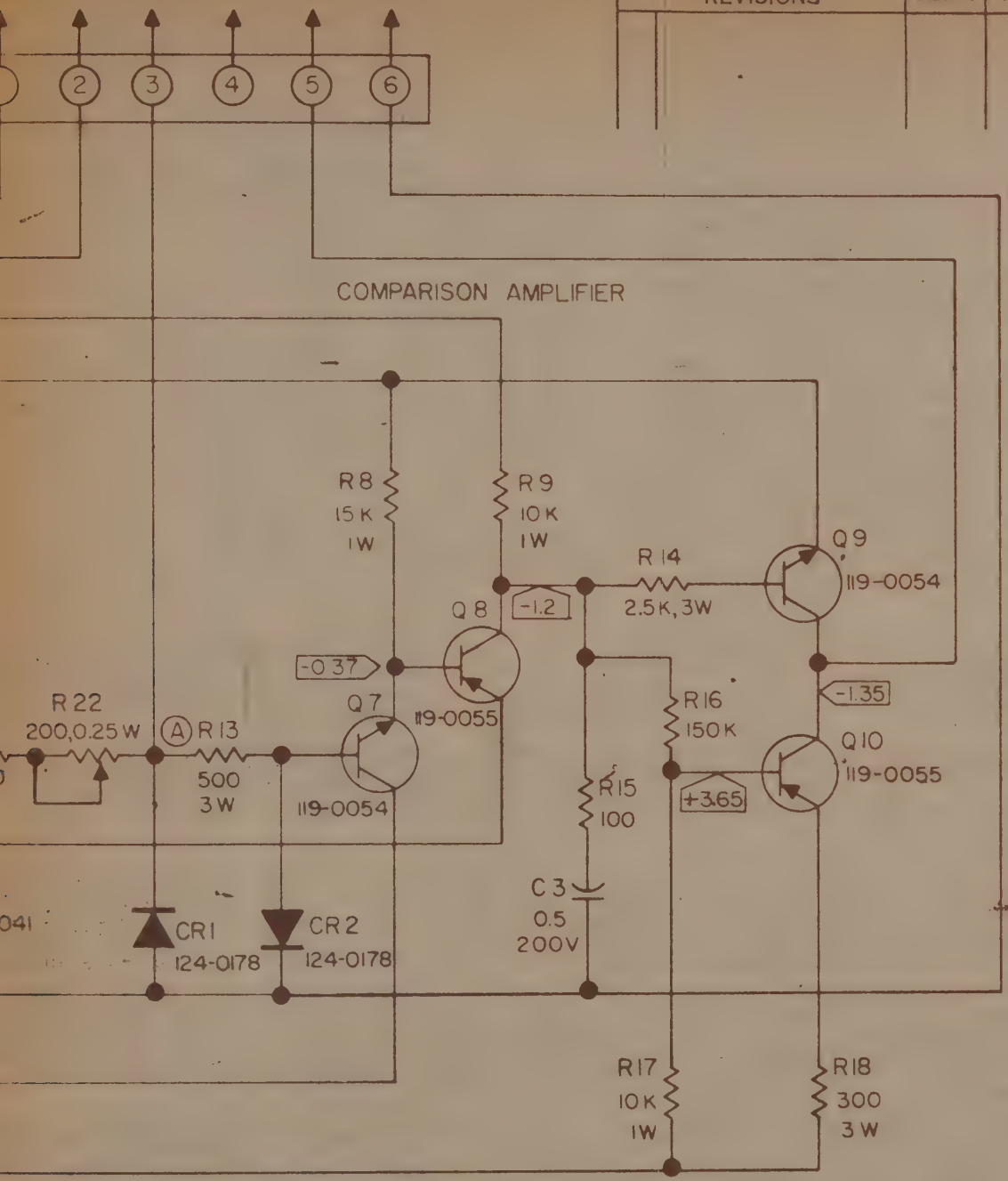
NOTE:

1. ALL VOLTAGES TAKEN UNDER CONDITIONS SPECIFIED ON MAIN SCHEMATIC

2. ORDER REPLACEMENT PARTS BY KEPCO PART NUMBER PROVIDED IN PARTS LIST SECTION.

TOLERANCE UNLESS OTHERWISE SPECIFIED: FRACTIONS ± 1/64 DEC

REVISIONS	DRAWN	CHKD.	APPD.	DATE



KEPCO INC.

FLUSHING, N.Y.

TITLE: CONTROL UNIT

DRAWN	CHECKED	APPROVED	DATE
L. REY			10-24-64

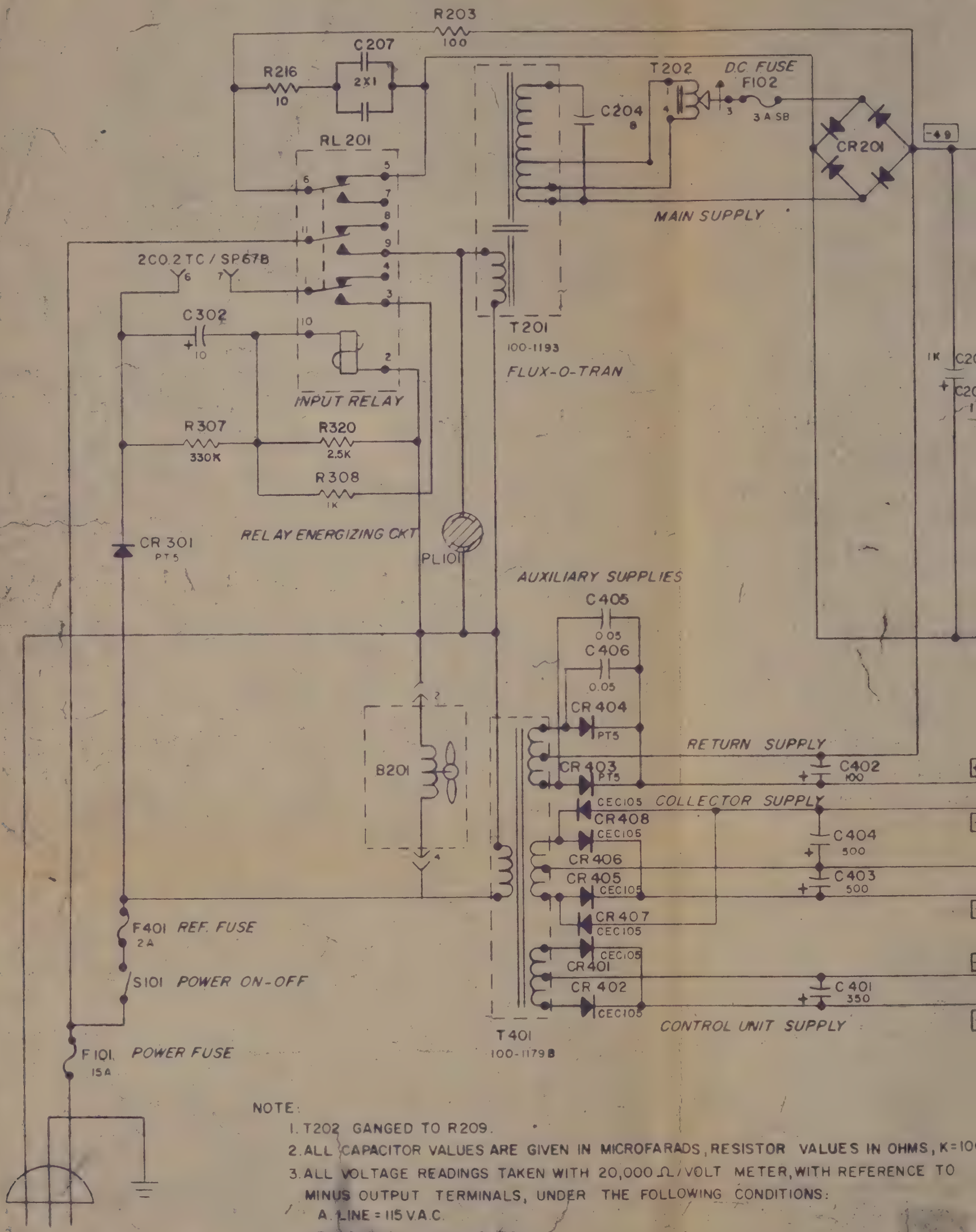
MODEL NO	PART NO.	SCALE
SM 325-2MX		NONE

DWG. NO. BM04606

± .005 ANGLES ± 1/2°

INPUT CONTROL

DC SOURCES



NOTE:

1. T202 GANGED TO R209.
2. ALL CAPACITOR VALUES ARE GIVEN IN MICROFARADS, RESISTOR VALUES IN OHMS, K=10
3. ALL VOLTAGE READINGS TAKEN WITH 20,000 Ω/VOLT METER, WITH REFERENCE TO MINUS OUTPUT TERMINALS, UNDER THE FOLLOWING CONDITIONS:
   A. LINE = 115 V.A.C.
   B. D.C. OUTPUT = 325 VOLTS.
   C. OUTPUT CURRENT = ZERO.
4. VOLTAGES ARE TYPICAL AND ARE SUBJECT TO NORMAL COMPONENT TOLERANCE
5. METERS M101, M102 APPLY ONLY TO SM-325-2 M AND SM-325-2 MX MODELS.
6. ORDER REPLACEMENT PARTS BY KEPCO PART NUMBER PROVIDED IN PARTS LIST SECTION

PASS CIRCUITRY

9 V. Z AZ/10M82Z

IN1374 – 9V.

IN2989A – 30V

IN1831 – 56

86

10M82Z

PASS ASS'Y 2C0.2/SP67B

SP67B 0.2

-0.2

R214 33

PASS ASS'Y 2C0.2TC/SP67B

R206 2.5 R207 2.5 R208 1

R202 20 TO INPUT CONTROL

R210 2K

R211 2K

DRIVER ASS'Y A0/ SP67B

R305 300

Q302 119-0055

R301 50

R304 1K

-0.25

R302 470

Q301 119-0055

-0.4

R303 5.6K

R309 100K

R306 180

C301 0.01

-0.5

CONTROL SIGNAL

CR303 IN429

R201 1.5K

R310 1K

I CO SUPPLY

OUTPUT

M102 (FRONT) – DC +

R212 50

R205 10K

OUTPUT CAP C201, 205 (2 X 1K)

R213 50

C501 20

C502 0.1

R215 10

+325 +DC

VOLTAGE CONTROL

R209 50K

C206 1.0

(REAR)

- ERROR SENSING
- OUTPUT
- GND
+ OUTPUT
+ ERROR SENSING

M101

S201

CONTROL UNIT CONNECTOR

CONTROL UNIT CONNECTOR SOCKET (WIRING SIDE)

KEPCO LABORATORIES

FLUSHING NEW YORK

ITEM: POWER UNIT	DES J.R.G.
	APPD 9-14-64
MODEL SM-325-2M8MX	DFTM M.C.
DWG No C-M00494	CHKD J.P.K.

KEPCO, INC. • 131-38 SANFORD AVENUE • FLUSHING, N.Y. 11352 • (212) 461-7000 • TWX #710-582-2631 • Cable: KEPCOPOWER NEWYORK

#146-0045 4/67